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DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

18 CFR Part 40

[Docket No. RM13-11-000]

Frequency Response and Frequency Bias Setting Reliability Standard

AGENCY: Federal Energy Regulatory Commission.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Commission proposes to approve Reliability Standard BAL-003-1 (Frequency Response and Frequency Bias Setting), submitted by the North American Electric Reliability Corporation, the Commission-certified Electric Reliability Organization. The proposed Reliability Standard defines the necessary amount of frequency response needed for reliable operations for each Balancing Authority within an Interconnection.

DATES: Comments are due **[INSERT DATE 60 days after publication in the FEDERAL REGISTER]**

ADDRESSES: Comments, identified by docket number, may be filed in the following ways:

- Electronic Filing through <http://www.ferc.gov>. Documents created electronically using word processing software should be filed in native applications or print-to-

PDF format and not in a scanned format.

- Mail/Hand Delivery: Those unable to file electronically may mail or hand-deliver comments to: Federal Energy Regulatory Commission, Secretary of the Commission, 888 First Street, NE, Washington, DC 20426.

Instructions: For detailed instructions on submitting comments and additional information on the rulemaking process, see the Comment Procedures Section of this document.

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SUPPLEMENTARY INFORMATION:

DEPARTMENT OF ENERGY
FEDERAL ENERGY REGULATORY COMMISSION

Frequency Response and Frequency Bias Setting
Reliability Standard

Docket No. RM13-11-000

NOTICE OF PROPOSED RULEMAKING

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144 FERC ¶ 61,057
DEPARTMENT OF ENERGY
FEDERAL ENERGY REGULATORY COMMISSION

Frequency Response and Frequency Bias Setting
Reliability Standard

Docket No. RM13-11-000

NOTICE OF PROPOSED RULEMAKING

1. Pursuant to section 215(d) of the Federal Power Act (FPA),¹ the Commission proposes to approve Reliability Standard BAL-003-1 (Frequency Response and Frequency Bias Setting), submitted by the North American Electric Reliability Corporation (NERC), the Commission-certified Electric Reliability Organization (ERO). The proposed Reliability Standard includes requirements pertaining to the measurement and provision of frequency response.² NERC's proposal addresses a gap in reliability as well as directives on the matter from Order No. 693.³ While the Commission proposes to approve proposed Reliability Standard BAL-003-1, the Commission also has concerns

¹ 16 U.S.C. 824o (2006).

² NERC defines "frequency response" in the NERC Glossary of Terms Used in Reliability Standards (Glossary) as follows:

Equipment: The ability of a system or elements of the system to react or respond to a change in system frequency. System: The sum of the change in demand, plus the change in generation, divided by the change in frequency, expressed in megawatts per 0.1 Hertz (MW/0.1 Hz).

³ See *Mandatory Reliability Standards for the Bulk-Power System*, Order No. 693, FERC Stats. & Regs. ¶ 31,242, at P 375, *order on reh'g*, Order No. 693-A, 120 FERC ¶ 61,053 (2007).

about certain provisions of the proposed Reliability Standard and, therefore, proposes that NERC submit a report and develop modifications to address the identified concerns. The Commission also proposes to approve four proposed new or revised definitions to the NERC Glossary, NERC's implementation plan, most proposed violation risk factors and violation severity levels, and NERC's proposed retirement of currently effective Reliability Standard BAL-003-0.1b.⁴

2. Frequency response is a measure of an Interconnection's ability to stabilize frequency immediately following the sudden loss of generation or load, and is a critical component of the reliable operation of the Bulk-Power System, particularly during disturbances and recoveries. Frequency response is predominately provided by the automatic and autonomous actions of turbine-governors with some response being provided by changes in demand due to changes in frequency. Failure to maintain frequency can disrupt the operation of equipment and initiate disconnection of power plant equipment to prevent it from being damaged, which could lead to wide-spread blackouts.

⁴ The Commission proposes to approve BAL-003-1 as it applies to the ERCOT Interconnection and the United States portions of the Eastern and Western Interconnections. The Commission proposes to take no action as BAL-003-1 applies to the Quebec Interconnection.

3. The proposed Reliability Standard establishes a minimum Frequency Response Obligation⁵ for each Balancing Authority, provides a uniform calculation of frequency response, establishes Frequency Bias Settings that establish values closer to actual Balancing Authority frequency response, and encourages coordinated automatic generation control (AGC) operation.⁶ These matters are not addressed in any currently-effective Reliability Standard. Because the proposed Reliability Standard addresses a gap in reliability, as well as certain directives from Order No. 693, we propose to approve the proposed Reliability Standard BAL-003-1.

4. While we propose to approve BAL-003-1, we also have concerns regarding certain provisions of the proposed standard, some of which NERC itself identifies in the reports included in its petition. We discuss below our specific concerns regarding:

(1) Requirement R1, the calculation of Frequency Response Measure by using the median statistical method, i.e., selecting the middle value in a set of data that is arranged

⁵ NERC proposes to define Frequency Response Obligation as “[t]he Balancing Authority’s share of the required Frequency Response needed for the reliable operation of an Interconnection. This will be calculated as MW/0.1Hz.”

⁶ NERC proposes to revise the definition of Frequency Bias Setting as “[a] number, either fixed or variable, usually expressed in MW/0.1 Hz, included in a Balancing Authority’s Area Control Error equation to account for the Balancing Authority’s inverse Frequency Response contribution to the Interconnection, and discourage response withdrawal through secondary control systems.”

in an ascending or descending order;⁷ (2) the potential for early withdrawal of primary frequency response before secondary frequency response, i.e., automatic generation control, is activated; (3) the need to study frequency response during low-load conditions; (4) appropriate identification of resource contingency criteria in the Western Interconnection; and (5) the need to adequately ensure that each Balancing Authority has available the resources it needs to meet its frequency response obligation. With regard to these concerns, the Commission seeks comments, and in some cases proposes that NERC develop modifications, conduct additional studies and/or submit a report to the Commission, as discussed below.

5. Frequency response, while a highly technical matter, is one fundamental measure of the reliability and robustness of the Bulk-Power System. It is incumbent on the Commission, the ERO, Balancing Authorities and, ultimately frequency response resources, to ensure that frequency response is timely and adequately provided, as well as accurately measured. Thus, we propose to approve proposed Reliability Standard BAL-003-1, but also propose to direct future development to address certain provisions that will better enable accurate measurement of delivered frequency response and ensure availability of adequate frequency response on the Bulk-Power System.

⁷ NERC proposes to define Frequency Response Measure as “[t]he median of all the frequency response observations reported annually by Balancing Authorities or Frequency Response Sharing Groups for frequency events specified by the ERO. This will be calculated as MW/0.1Hz.”

I. Background**A. Section 215 of the FPA**

6. Section 215 of the FPA requires the Commission-certified ERO to develop mandatory and enforceable Reliability Standards, subject to Commission review and approval. Once approved, the Reliability Standards may be enforced by the ERO subject to the Commission's oversight, or by the Commission independently.⁸ Pursuant to the requirements of FPA section 215, the Commission established a process to select and certify an ERO,⁹ and subsequently certified NERC as the ERO.¹⁰

B. Procedural History

7. On March 16, 2007, in Order No. 693, the Commission approved 83 of 107 proposed Reliability Standards pursuant to FPA section 215(d), including currently-effective BAL-003-0. In addition, pursuant to section 215(d)(5) of the FPA, the Commission directed NERC, among other things, to develop modifications to BAL-003-0 to address certain issues identified by the Commission. Specifically, the Commission directed NERC to:

⁸ See 16 U.S.C. 824o(e)(3).

⁹ *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval and Enforcement of Electric Reliability Standards*, Order No. 672, FERC Stats. & Regs. ¶ 31,204, *order on reh'g*, Order No. 672-A, FERC Stats. & Regs. ¶ 31,212 (2006).

¹⁰ *North American Electric Reliability Corp.*, 116 FERC ¶ 61,062, *order on reh'g and compliance*, 117 FERC ¶ 61,126 (2006) (certifying NERC as the ERO responsible for the development and enforcement of mandatory Reliability Standards), *aff'd sub nom. Alcoa Inc. v. FERC*, 564 F.3d 1342 (D.C. Cir. 2009).

develop a modification to BAL-003-0 through the Reliability Standards development process that: (1) includes Levels of Non-Compliance; (2) determines the appropriate periodicity of frequency response surveys necessary to ensure that Requirement R2 and other requirements of the Reliability Standard are being met, and to modify Measure M1 based on that determination; and (3) defines the necessary amount of Frequency Response needed for Reliable Operation for each balancing authority with methods of obtaining and measuring that the frequency response is achieved.¹¹

8. On March 18, 2010, the Commission established a six month compliance deadline for NERC to submit modifications to Reliability Standard BAL-003-0 responsive to the Commission's directives in Order No. 693.¹² NERC requested rehearing and clarification. On rehearing for further consideration, the Commission directed Commission staff to convene a technical conference to provide an opportunity for a public discussion regarding technical issues pertaining to the development of a frequency response requirement.¹³ The Commission also directed NERC to submit a proposed schedule that includes firm deadlines for completing studies and analyses needed to

¹¹ Order No. 693, FERC Stats. & Regs. ¶ 31,242 at P 375.

¹² *Mandatory Reliability Standards for the Bulk-Power System*, 130 FERC ¶ 61,218 (2010).

¹³ *Mandatory Reliability Standards for the Bulk-Power System*, 131 FERC ¶ 61,136, at P 15 (2010).

develop a frequency response requirement, and for submission of a modified BAL-003-0 Reliability Standard responsive to the Commission directives in Order No. 693.

9. On October 25, 2010, NERC submitted an action plan and estimated timelines for completing studies and analyses needed to develop a frequency response requirement. NERC indicated that it would complete the revised Reliability Standard by May 2012.¹⁴ On March 30, 2012, NERC submitted a motion for an extension of time to submit modifications, and on May 4, 2012, the Commission granted the request through May 2013.¹⁵ NERC submitted its petition requesting approval of proposed Reliability Standard BAL-003-1 on March 29, 2013.

C. Frequency Response and Frequency Bias Setting

10. As mentioned above, frequency response is a measure of an Interconnection's ability to stabilize frequency immediately following the sudden loss of generation or load. NERC explains that "[s]ystem frequency reflects the instantaneous balance between generation and load. Reliable operation of a power system depends on maintaining frequency within predetermined boundaries above and below a scheduled value, which is 60 Hertz (Hz) in North America."¹⁶ As discussed in this Notice of

¹⁴ The Commission accepted NERC's proposed action plan on December 16, 2010. *Mandatory Reliability Standards for the Bulk-Power System*, 133 FERC ¶ 61,212 (2010).

¹⁵ *Mandatory Reliability Standards for the Bulk-Power System*, 139 FERC ¶ 61,097 (2012).

¹⁶ NERC Petition at 3.

Proposed Rulemaking (NOPR), frequency response is provided in two stages, referred to as primary frequency response and secondary frequency response.

11. Primary frequency control involves the autonomous, automatic, and rapid action of a generator, or other resource, to change its output (within seconds) to rapidly dampen large changes in frequency. The ability of a power system to withstand a sudden loss of generation or load depends on the presence and adequacy of resources capable of providing rapid incremental power changes to counterbalance the disturbance and arrest a frequency deviation.¹⁷

12. Secondary frequency response, also known as automatic generation control (AGC), is produced from either manual or automated dispatch from a centralized control system.¹⁸ It is intended to balance generation, interchange and demand by managing the response of available resources within minutes as opposed to primary frequency response, which manages response within seconds. Frequency bias is an input used in the calculation of a Balancing Authority's area control error (ACE) to account for the power changes associated with primary frequency response. However, frequency bias is not the same as frequency response. Frequency Bias Setting is a secondary control setting of the AGC system, not a primary control parameter, and changes in the Frequency Bias Setting

¹⁷ Conventional turbine-generators, as well as other resources, are capable of providing primary frequency response. *See* NERC Petition, Exh. D at 3.

¹⁸ NERC Petition at 11. Additional background information about the engineering concepts that pertain to frequency response is discussed in the Frequency Response Background Document, NERC Petition, Exh. D.

of a Balancing Authority do not change the primary frequency response. The Frequency Bias Setting is used in AGC to prevent withdrawal of generator primary control action following a disturbance as long as frequency is off its nominal value.¹⁹

II. NERC Petition

13. NERC submitted its petition on March 29, 2013, seeking approval of Reliability Standard BAL-003-1, four new or modified definitions for inclusion in the NERC Glossary, violation risk factors and violation severity levels, an implementation plan for the proposed standard, and retirement of currently-effective BAL-003-0.1b. NERC explains that, beginning in 2010, NERC conducted a frequency response initiative to perform an in-depth analysis of Interconnection-wide frequency response “to achieve a better understanding of the factors influencing frequency response across North America.”²⁰ According to NERC, one of the basic objectives of the frequency response initiative included increasing coordinated communication and outreach on the issue, including webinars, and NERC alerts.²¹

14. NERC developed several reports that provide the conclusions and recommendations resulting from the frequency response initiative, which NERC includes

¹⁹ NERC Petition at 11.

²⁰ *Id.* at 11-12.

²¹ *Id.* at 12.

as exhibits to its petition.²² Further, NERC states that a detailed explanation of the development, testing, and implementation of proposed BAL-003-1 is provided in the Frequency Response Standard Background Document, included as Exhibit D to the petition.

A. Proposed Reliability Standard BAL-003-1²³

15. NERC states that the purpose of the proposed Reliability Standard is to ensure that “a Balancing Authority’s Frequency Bias Setting is accurately calculated to match its actual Frequency Response” and also “to provide consistent methods for measuring Frequency Response and determining the Frequency Bias Setting.”²⁴ The proposed Reliability Standard consists of four requirements, and is applicable to Balancing Authorities and Frequency Response Sharing Groups.²⁵

²² See NERC Petition, Exh. F (Frequency Response Initiative Report), Exh. G (Status of Recommendations), and Exh. H (Supplemental Report).

²³ Proposed Reliability Standard BAL-003-1 is not attached to the notice of proposed rulemaking. The complete text of BAL-003-1 is available on the Commission’s eLibrary document retrieval system in Docket No. RM13-11-000 and is posted on the ERO’s web site, *available at* <http://www.nerc.com>.

²⁴ NERC Petition at 15. *See also* proposed BAL-003-1, Purpose Statement:

To require sufficient Frequency Response from the Balancing Authority (BA) to maintain Interconnection Frequency within predefined bounds by arresting frequency deviations and supporting frequency until the frequency is restored to its scheduled value. To provide consistent methods for measuring Frequency Response and determining the Frequency Bias Setting.

²⁵ NERC proposes to define Frequency Response Sharing Group as “[a] group whose members consist of two or more Balancing Authorities that collectively maintain,
(continued...) ”

16. **Requirement R1** requires that each Balancing Authority or Frequency Response Sharing Group must achieve an annual Frequency Response Measure that is “equal to or more negative than its Frequency Response Obligation” needed to ensure sufficient Frequency Response. Specifically, Requirement R1 provides:

Each Frequency Response Sharing Group (FRSG) or Balancing Authority that is not a member of a FRSG shall achieve an annual Frequency Response Measure (FRM) (as calculated and reported in accordance with Attachment A) that is equal to or more negative than its Frequency Response Obligation (FRO) to ensure that sufficient Frequency Response is provided by each FRSG or BA that is not a member of a FRSG to maintain Interconnection Frequency Response equal to or more negative than the Interconnection Frequency Response Obligation.

NERC explains the Requirement R1 has the primary objective of “determin[ing] whether a Balancing Authority has sufficient Frequency Response for reliable operations.”²⁶ According to NERC, Requirement R1 achieves this objective “via FRS Form 1 and the process in Attachment A that provides the method for

allocate, and supply operating resources required to jointly meet the sum of the Frequency Response Obligations of its members.” NERC Petition at 13. The proposed Reliability Standard allows Balancing Authorities to cooperatively form Frequency Response Sharing Groups as a means to jointly meet the obligations of the standard. *Id.*

²⁶ *Id.* at 15.

determining the Interconnections' necessary amount of Frequency Response and allocating it to the Balancing Authorities.”²⁷ According to NERC, another main objective of Requirement R1 is to provide the information needed to calculate Control Performance Standard limits and Frequency Bias Settings. NERC asserts that Requirement R1 and Attachment A satisfy the Commission's directive in Order No. 693 to “determine the appropriate periodicity of frequency response surveys necessary to ensure that Requirement R2 and other requirements of the Reliability Standard are met...”²⁸

17. **Requirement R2** requires that:

Each Balancing Authority that is a member of a multiple Balancing Authority Interconnection and is not receiving Overlap Regulation Service and uses a fixed Frequency Bias Setting shall implement the Frequency Bias Setting determined in accordance with Attachment A, as validated by the ERO, into its Area Control Error (ACE) calculation during the implementation period specified by the ERO

²⁷ *Id.* NERC explains that “Attachment A (appended to the proposed standard) is a supporting document for proposed Reliability Standard BAL-003-1 that discusses the process the ERO will follow to validate the Balancing Authority's FRS Form 1 data and publish the official Frequency Bias Settings. FRS Form 1 provides the guidance as to how to account for and measure Frequency Response. FRS Form 1, and the underlying data retained by the Balancing Authority, will be used for measuring whether sufficient Frequency Response was provided.” NERC Petition at 4.

²⁸ *Id.* at 16 (citing Order No. 693, FERC Stats. & Regs. ¶ 31,242 at P 375).

and shall use this Frequency Bias Setting until directed to change by the ERO.

NERC explains that setting the frequency bias to better approximate the Balancing Authority natural response characteristic will improve the quality of ACE control and general AGC system control response. NERC states that the ERO, in coordination with the regions of each Interconnection, will annually review Frequency Bias Setting data submitted by the Balancing Authorities.

18. **Requirement R3** provides that:

Each Balancing Authority that is a member of a multiple Balancing Authority Interconnection and is not receiving Overlap Regulation Service and is utilizing a variable Frequency Bias Setting shall maintain a Frequency Bias Setting that is: (1.1) Less than zero at all times, and (1.2) Equal to or more negative than its Frequency Response Obligation when Frequency varies from 60 [Hertz] Hz by more than +/- 0.036 Hz.

NERC explains that, in an Interconnection with multiple Balancing Authorities, the Frequency Bias Setting should be coordinated among all Balancing Authorities in the Interconnection. According to NERC, when there is a minimum Frequency Bias Setting requirement, it should apply for all Balancing Authorities. However, Balancing Authorities using a variable Frequency Bias Setting may have non-linearity in their actual response for a number of reasons including the deadband settings of their generator governors. The measurement to ensure that these Balancing Authorities are conforming to the Interconnection minimum is adjusted

to remove the deadband range from the calculated average Frequency Bias Setting actually used.²⁹

19. **Requirement R4** requires that

Each Balancing Authority that is performing Overlap Regulation Service shall modify its Frequency Bias Setting in its ACE calculation, in order to represent the Frequency Bias Setting for the combined Balancing Authority Area, to be equivalent to either:

- the sum of the Frequency Bias Settings as shown on FRS Form 1 and FRS Form 2 for the participating Balancing Authorities as validated by the ERO, or
- the Frequency Bias Setting shown on FRS Form 1 and FRS Form 2 for the entirety of the participating Balancing Authorities' Areas.

NERC states that proposed Requirement R4 is similar to Requirement R6 in the currently-effective BAL-003-0.1b. NERC explains that overlap regulation service is a method of providing regulation service in which a Balancing Authority incorporates another Balancing Authority's actual interchange, frequency

²⁹ NERC Petition at 20. NERC further states that "For BAs using variable bias, FRS Form 1 has a data entry location for the previous year's average monthly Bias. The BA and the ERO can compare this value to the previous year's Frequency Bias Setting minimum to ensure Requirement R3 has been met."

responses, and schedule into the providing Balancing Authority's AGC/ACE equation.³⁰

B. Implementation Plan

20. NERC requests approval of an implementation plan for proposed BAL-003-1, pursuant to which (1) Requirement R2, Requirement R3 and Requirement R4 would become effective the first day of the first calendar quarter that is twelve months following the effective date of a Final Rule in this docket, and (2) Requirement R1 would become effective the first day of the first calendar quarter that is twenty-four months following the effective date of a Final Rule in this docket. NERC proposes retirement of the existing Reliability Standard BAL-003-0.1b at midnight of the day immediately prior to the effective date of Requirements R2, Requirement R3 and Requirement R4 of the proposed Reliability Standard.

21. NERC requests approval of three new definitions and the revised definition of Frequency Bias Setting effective the first day of the first calendar quarter that is twelve months following the effective date of a Final Rule in this docket.³¹

³⁰ *Id.* at 21.

³¹ NERC proposes to incorporate the proposed revised definition for Frequency Bias Setting in Reliability Standards (1) BAL-001-0.1a Real Power Balancing Control Performance, (2) BAL-004-0 Time Error Correction, (3) BAL-004-1 Time Error Correction, and (5) BAL-005-0.1b Automatic Generation Control. NERC also proposes retirement of the existing definition of Frequency Bias Setting at midnight of the day immediately prior to the effective date of Requirement R2, Requirement R3, and Requirement R4 of the proposed Reliability Standard.

III. Discussion

22. Pursuant to section 215(d) of the FPA, we propose to approve the proposed Reliability Standard BAL-003-1 as just, reasonable, not unduly discriminatory or preferential, and in the public interest. The proposed Reliability Standard establishes a minimum Frequency Response Obligation for each Balancing Authority, provides a uniform calculation of frequency response, establishes Frequency Bias Settings that are closer to actual Balancing Authority frequency response, and encourages coordinated automatic generation control operation. The proposed Reliability Standard addresses a gap in reliability as these matters are either not - or not adequately -addressed in any currently-effective Reliability Standard. Further, proposed BAL-003-1 addresses certain directives from Order No. 693. We also propose to approve the proposed new and modified definitions, most violation severity levels and violation risk factors, and retirement of the currently-effective standard and NERC's implementation plan.

23. While we propose to approve BAL-003-1, we have concerns regarding certain provisions of the proposed standard, some of which NERC itself identifies in the reports included in its petition. Specifically, below, we discuss the following issues: (A) the use of median in determining the Frequency Response Measure; (B) determination of Interconnection Frequency Response Obligation; (C) methods of obtaining frequency response; (D) withdrawal of primary frequency response before secondary frequency response is activated; (E) light-load case study; (F) assignment of Violation Risk Factors and Violation Severity Levels; and (G) the associated and supporting documents, including Attachment A and the Procedure for ERO Support of Frequency Response and

Frequency Bias Setting Standard. While we will not set deadlines for proposed directed modifications based on NERC's finding in its 2013 State of Reliability Report that actual frequency response is no longer declining in recent years,³² we will expect NERC to continue to monitor such trends, and any change toward further frequency response decline will justify revisiting the issue of deadlines.

A. Use of the "Median" in Determining the Frequency Response Measure

24. As discussed above, Requirement R1 of BAL-003-1 provides that each Balancing Authority or Frequency Response Sharing Group achieve an annual Frequency Response Measure that is equal to or more negative than its Frequency Response Obligation needed to ensure sufficient Frequency Response. NERC proposes to define the Frequency Response Measure as "the median of all the Frequency Response observations reported annually by Balancing Authorities or Frequency Response Sharing Groups for the frequency events specified by the ERO."³³ NERC defines the "median" as "the numerical value separating the higher half of a one-dimensional sample, a one-dimensional population, or a one-dimensional probability distribution from the lower

³² See NERC, *State of Reliability 2013* (May 2013), available at http://www.nerc.com/pa/RAPA/PA/Performance%20Analysis%20DL/2013_SOR_May%2015.pdf.

³³ NERC Petition at 13.

half. The median of a finite list of numbers is found by arranging all the observations from lowest value to highest value and picking the middle one.”³⁴

25. NERC states that the standard drafting team evaluated different approaches for averaging individual event observations to compute a technically sound estimate of Frequency Response Measure, including median and linear regression analysis.³⁵

Explaining why the drafting team chose to use the median, NERC states:

In general, statisticians use the median as the best measure of a central tendency when a population has outliers. Based on the analyses performed thus far, the standard drafting team believes that the median’s superior resiliency to this type of data quality problem makes it the best aggregation technique at the time. However, the standard drafting team sees merit and promise in future research with sample filtering combined with a technique such as linear regression. When compared with the mean, linear regression shows superior performance with respect to the elimination of noise because the measured data is weighted by the size of the frequency

³⁴ *Id.*, Exh. F (Frequency Response Initiative Report) at 72. NERC developed a procedure for selecting frequency response observations. *See* NERC Petition, Exh. C (Procedure for ERO Support of Frequency Response and Frequency Bias Setting Standard). The Procedure is referenced, but not included, in Attachment A of BAL-003-1.

³⁵ NERC Petition at 17-18. The Frequency Response Initiative Report defines the linear regression method as the linear average of a multi-dimensional sample, or a multi-dimensional population. *See id.*, Exh F at 73.

changes associated with the event. ... The standard drafting team acknowledges that linear regression should be re-evaluated for use in the BAL-003 Reliability Standard once more experience is gained with data collected.³⁶

However, the Frequency Response Initiative Report compared the median, mean, and linear regression methods for measuring the frequency response, and found that the linear regression method is preferred. The Frequency Response Initiative Report recommended using a linear regression method for calculating the Balancing Authority Frequency Response Measure for compliance with the proposed standard.³⁷ This recommendation was not incorporated into the draft standard.³⁸

26. NERC has provided adequate rationale for using the median to determine the required Frequency Response Measure. NERC explains that application of the median is supported by the analyses performed to date. The Commission proposes to approve BAL-003-1 on that basis.³⁹

³⁶ *Id.* at 17-18 (footnote omitted). *See also id.*, Exh. F at 72-78. NERC explains that the “noise” refers to factors that can influence data and produce outliers. *Id.* at 18, n.34.

³⁷ *See* NERC Petition, Exh. F at 78.

³⁸ NERC and the Frequency Response Working Group will include an update of the linear regression analysis from the Frequency Response Initiative Report during the annual review of the process for selection of frequency events for the Balancing Authorities. *See* NERC Petition, Exh. G (Status of Recommendations of the Frequency Response Initiative Report) at Recommendation 13.

³⁹ NERC Petition at 17.

27. However, as NERC acknowledges in both its petition and Frequency Response Initiative Report, the use of linear regression is a superior method to determine the required Frequency Response Measure. According to NERC, the standard drafting team recognizes that the use of linear regression should be re-evaluated once more experience is gained with data collected.⁴⁰ We are also concerned whether use of the median adequately represents actual data that could, on occasions, be significantly higher or lower than the median. Thus, the Commission proposes to direct that NERC develop a modification to apply a more appropriate methodology for determining the required Frequency Response Measure. For example, based on the record in this docket, it appears that the linear regression method is superior to the median when determining the Frequency Response Measure. We seek comment on whether a more appropriate methodology should be used in the determination of the Frequency Response Measure.

B. Determination of Interconnection Frequency Response Obligation

28. Proposed BAL-003-1 establishes a target contingency protection criterion for each Interconnection, known as the Interconnection Frequency Response Obligation. The proposed methodology for determining each Interconnection's obligation for obtaining the necessary amount of frequency response is set forth in Attachment A of the proposed Reliability Standard. The Interconnection Frequency Response Obligation is based on the "resource contingency criteria," which is the largest "Category C" event for the

⁴⁰ *Id.* at 18.

Interconnection,⁴¹ except for the Eastern Interconnection, which uses the largest event in the last ten years.⁴² The Interconnection Frequency Response Obligation for each Interconnection is a function of the resource contingency criteria and the maximum change in frequency. The maximum change in frequency is calculated by adjusting the starting frequency for each Interconnection by the “prevailing UFLS first step,” i.e., under-frequency load shedding for the Interconnection as adjusted by specific information on the frequency deviations for the observed events which make up the data set used to calculate the Frequency Response Measure.⁴³ For multiple Balancing Authority Interconnections, the Frequency Response Obligation is allocated to Balancing Authorities based on the formula set forth in Attachment A. FRS Form 1 and the

⁴¹ See Proposed Reliability Standard BAL-003-1, Attachment A at 1. Category C events are defined in Reliability Standard TPL-003-0 (System Performance Following Loss of Two or More BES Elements), Table 1.

⁴² For the Eastern Interconnection, the largest event in the last ten years is 4,500 MW, which occurred on August 4, 2007. See Proposed Reliability Standard BAL-003-1, Attachment A at 1; NERC Petition, Exh. F at 34-37, 54.

⁴³ *Id.* Under frequency load shedding is intended to be a safety net to prevent against system collapse from severe contingencies. The resource contingency criteria is selected to avoid violating the under frequency load shedding settings. See NERC Petition, Exh. D at 36 (“in general, the goal is to avoid triggering the first step of

under-frequency load shedding (UFLS) in the given Interconnection for reasonable contingencies expected”).

underlying data retained by the Balancing Authorities are used for measuring whether frequency response was provided.

1. Eastern Interconnection – Prevailing UFLS First Step

29. For the Eastern Interconnection, Attachment A identifies 59.5 Hz as the “first step” of under-frequency load shedding in the calculation of the default Interconnection Frequency Response Obligation. Attachment A notes that this set point is “a compromise value set midway between the stable frequency minimum established in PRC-006-1 (59.3 Hz) and the local protection under frequency load shedding setting of 59.7 Hz used in Florida and Manitoba.”⁴⁴ The Frequency Response Initiative Report notes that the Florida Reliability Coordinating Council (FRCC) concluded that the Interconnection Frequency Response Obligation starting frequency of the prevalent 59.5 Hz for the Eastern Interconnection is acceptable in that it imposes no greater risk of under frequency load shedding operation in FRCC for an external resource loss than for an internal FRCC event.⁴⁵

30. NERC does not provide support for the statement that the first-step value of 59.5 Hz in the calculation of the Interconnection Frequency Response Obligation imposes no greater risk of under frequency load shedding operation in FRCC for an external resource loss than for an internal FRCC event. Noting that the actual first-step of under-frequency load shedding for the Eastern Interconnection is 59.7 Hz, we seek comment

⁴⁴ Proposed Reliability Standard BAL-003-1, Attachment A at 2.

⁴⁵ See NERC Petition, Exh. F (Frequency Response Initiative Report) at 4, n.3.

from NERC and others on the technical source or support for this statement. That is, we seek clarification and support if the intent of the proposal is that FRCC will start shedding load automatically before an event meets the value of 59.5 Hz used in the proposed Reliability Standard to determine the Interconnection Frequency Response Obligation.

2. Western Interconnection – Largest N-2 Event

31. As previously noted, the Interconnection Frequency Response Obligation is based on the largest Category C event, or N-2 (loss of two or more BES elements) for the Interconnection. The default Interconnection Frequency Response Obligation for the Western Interconnection uses the loss of two Palo Verde generating station units, which nets 2,400 MW as the resource contingency criteria.⁴⁶ However, NERC indicates that the default Interconnection Frequency Response Obligation calculation scenarios and the calculation of the Frequency Response Measure for the Western Interconnection do not take into account the intentional tripping of generation that will occur during the operation of remedial action schemes. For example, the Frequency Response Initiative Report indicates that operation of the Pacific Northwest Remedial Action Scheme trips up to 3,200 MW of generation in the Pacific Northwest on loss of the Pacific DC Intertie.⁴⁷ The Frequency Response Initiative Report recommends that NERC and the

⁴⁶ *See Id.*, Exh. F at 53.

⁴⁷ The Pacific Northwest Remedial Action Scheme, among other things, blocks frequency response from a number of generators and Balancing Authorities to avoid overloading the Pacific AC ties. *See* NERC Petition, Exh. F at 62.

Western Interconnection analyze the implications of operation of the Pacific Northwest Remedial Action Scheme.⁴⁸

32. We are concerned whether the N-2 contingency identified as an input to the Attachment A methodology for calculating the Interconnection Frequency Response Obligation identifies the largest N-2 event in the Western Interconnection. NERC's study suggests that, for example, the Pacific Northwest Remedial Action Scheme could result in a larger contingency that, if included as an input to the Attachment A calculation, would produce more accurate results. Accordingly, we propose to direct that NERC submit a compliance filing that analyzes, with supporting documentation, the implications of the Pacific Northwest Remedial Action Scheme or any other Remedial Action Scheme which involves intentional tripping of greater than 2,400 MW of generation, and whether such a contingency would provide a more accurate basis for the determination of the Western Interconnection default Interconnection Frequency Response Obligation.

C. Methods for Obtaining Frequency Response

33. In Order No. 693, the Commission directed NERC to develop a modification to BAL-003-0 that includes methods for "obtaining" frequency response.⁴⁹ While the

⁴⁸ *See Id.* NERC notes that the maximum value of the Pacific Northwest Remedial Action Scheme has been updated to be 2,850 MW. *See* NERC Petition, Exh. G (Status of Recommendations of the Frequency Response Initiative Report).

⁴⁹ Order No. 693, FERC Stats. & Regs. ¶ 31,242 at P 375. The Commission directed NERC to develop a modification to BAL-003-0 that "defines the necessary amount of Frequency Response needed for Reliable Operation for each balancing
(continued...)

proposed Reliability Standard establishes an Interconnection Frequency Response Obligation and allocates this obligation to the Balancing Authorities within the Interconnection, the proposed Reliability Standard imposes no obligation on resources that are capable of providing frequency response. NERC states that “the creation of Frequency Response Sharing Groups is one of the ways the standard drafting team addressed the Commission’s directive to provide methods for obtaining Frequency Response.”⁵⁰ In addition, NERC states that there are various methods of obtaining frequency response, including regulation services, contractual services, tariff provisions, generator interconnection agreements, and contracts with an internal resource or loads.⁵¹

34. The proposed Reliability Standard imposes an obligation on each Balancing Authority to obtain frequency response, and a Balancing Authority not meeting its obligation would be in noncompliance of proposed BAL-003-1. We recognize that the Balancing Authorities must, in turn, obtain frequency response from available resources, and the proposed Reliability Standard imposes no obligation on those resources to provide frequency response.⁵² The Commission proposes to direct NERC to submit a

authority with methods of *obtaining* and measuring that the frequency response is achieved.” *Id.* (emphasis added).

⁵⁰ NERC Petition at 13, 15-17.

⁵¹ *Id.* at 14, n. 30; Exh. D at 37.

⁵² NERC points out that improvements in frequency response have been achieved in the ERCOT Interconnection. *See* NERC Petition at 12, n. 27. For example, the ERCOT Nodal Operating Guides Section 2 has specified requirements for governor deadband settings. NERC Petition, Exh. F at 81. In addition, the Texas Reliability Entity
(continued...)

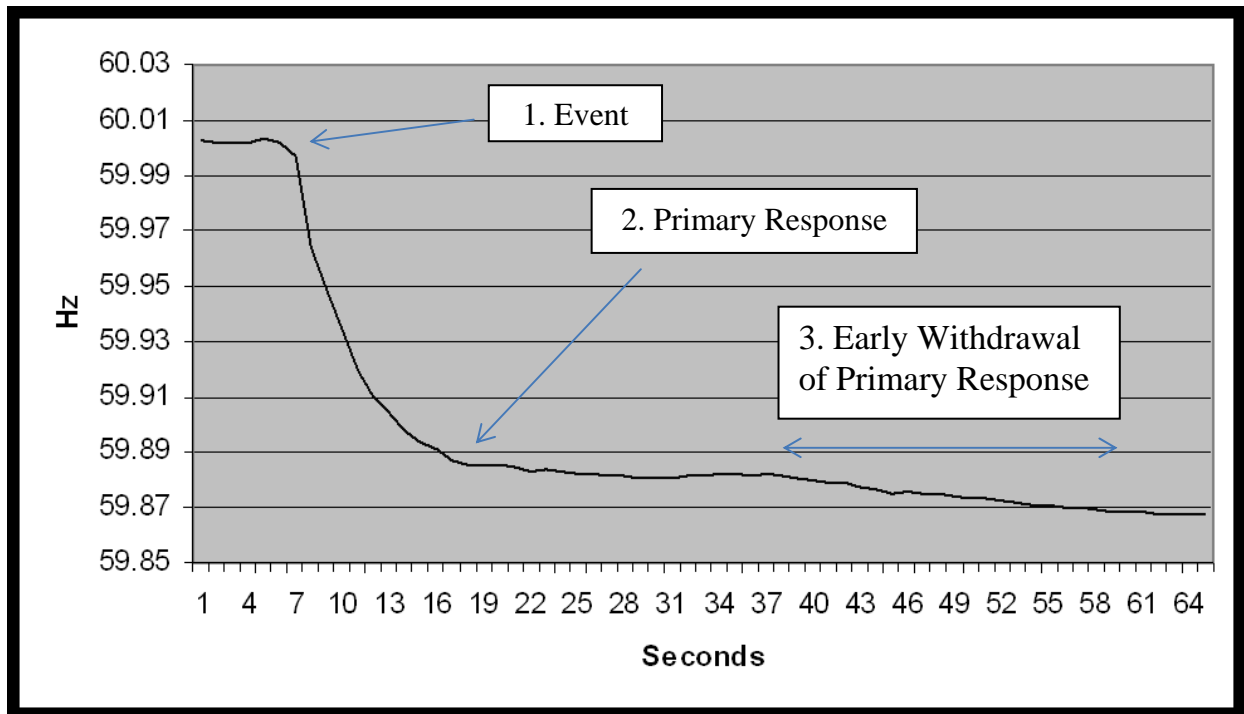
report 15 months after implementation of BAL-003-1 that provides an analysis of the availability of resources for each Balancing Authority to meet its Frequency Response Obligation during the first year of implementation. The report should also provide data indicating whether actual Frequency Response was sufficient to meet each Balancing Authority's Frequency Response Obligation. Further, upon completion of this analysis, should the findings indicate that the Frequency Response Obligation was not met, NERC should provide appropriate recommendations to ensure that frequency response can be maintained at all times within each Balancing Authority's footprint.

D. Premature Withdrawal of Primary Frequency Response

35. As explained above, following the sudden loss of generation, the automatic and immediate increase in power output by resources providing primary frequency control seeks to quickly arrest and stabilize the frequency of the interconnection, usually within 30 seconds or less. After this rapid primary frequency response, AGC provides secondary frequency response to return frequency to the scheduled value in time frames of several minutes after the loss of generation. If a significant amount of primary frequency response is withdrawn before the secondary frequency response is activated, a

Board of Directors has approved a Regional Reliability Standard, which is currently under review by the NERC Board of Directors, that requires generators to maintain prescribed deadband and droop settings that assure generator governors provide automatic sustained frequency response for specified frequency deviations. *See* BAL-001-TRE-1. http://www.texasre.org/CPDL/BAL-001-TRE-1_5.24.11.docx

further drop in frequency response will occur. This drop in frequency is illustrated by the following diagram:⁵³



36. NERC indicates that, while the standards drafting team addressed the early withdrawal of primary frequency response, there are no requirements that address this issue and it remains a concern.⁵⁴ Specifically, during the initial recovery from the loss of

⁵³ NERC Petition, Exh. F at 35, fig. 21.

⁵⁴ See *Id.*, Exh. D (Frequency Response Standard Background Document) at 19 (“the intentional withdrawal of response before frequency has been restored to schedule can cause a decline in frequency beyond that which would be otherwise expected. This intentional withdrawal of response is highly detrimental to reliability. Therefore, it can be concluded in general that sustained response has a higher reliability value than

un-sustained response.”).

a generator, a “gap” can occur if significant amounts of primary frequency responses are withdrawn before the secondary response is fully activated. As previously noted, the Interconnection Frequency Response Obligation for each Interconnection is a function of the resource contingency criteria and the maximum change in frequency.⁵⁵ The Frequency Response Initiative Report recommends that an adjustment should be made to the maximum allowable change in frequency to compensate for the predominate withdrawal of primary frequency response exhibited in an Interconnection until such withdrawal is no longer exhibited.⁵⁶ NERC includes an adjustment to provide an additional primary frequency response when early withdrawal of primary frequency response would occur.⁵⁷ This adjustment only partially addresses the concern because, while increased primary frequency response is beneficial, it still does not address early withdrawal of primary frequency response that otherwise would allow time for secondary frequency response to prevent further decline in frequency. The Frequency Response Initiative Report also recommends that this adjustment should be carefully monitored and recalculated during the annual Interconnection Frequency Response Obligation

⁵⁵ The maximum change in frequency is an amount of frequency deviation based on the loss of the identified resource contingency that will not trigger under-frequency load shedding.

⁵⁶ NERC Petition, Exh. F at 5.

⁵⁷ In addition NERC extends the time period (to 20 – 52 seconds from the time of the frequency event) for the measurement of the low point of frequency deviation to provide an incentive to reduce primary frequency response withdrawal.

calculations.⁵⁸ The Frequency Response Initiative Report notes that there are potential ways of alleviating this withdrawal symptom, including, as discussed below, modification of outer-loop control systems that could prevent withdrawal of primary frequency response.

37. NERC's 2012 Frequency Response Initiative Report states "[w]ithdrawal of primary frequency response is an undesirable characteristic associated most often with digital turbine-generator control systems using setpoint output targets for generator output. These are typically outer-loop control systems that defeat the primary frequency response of the governors after a short time to return the unit to operating at a requested MW output."⁵⁹ The Frequency Response Initiative Report recommends measuring and tracking frequency response sustainability trends.⁶⁰ The Frequency Response Initiative Report also recommends that "NERC should include guidance on methods to reduce or eliminate the effects of primary frequency response withdrawal by outer-loop unit or plant control systems."⁶¹

38. We are concerned that proposed Reliability Standard BAL-003-1 does not adequately address the reliability issue associated with the withdrawal of primary

⁵⁸ Id. at 50. This adjustment is initially applied in the Eastern Interconnection.

⁵⁹ Id. at 31.

⁶⁰ Id. at 35. The Frequency Response Initiative Report also recognizes unit characteristics and operating philosophies as typical causes.

⁶¹ Id. at 41-42.

frequency response prior to activation of secondary frequency response. The premature withdrawal of primary frequency response absent activation of resources providing secondary frequency response may lead to under-frequency load shed and possible cascading outages. Accordingly, we propose to direct that NERC develop a modification to BAL-003-1 to address the concern of premature withdrawal of frequency response prior to the activation of secondary frequency response.

E. Light-Load Case Study

39. NERC's Frequency Response Initiative Report recognizes that "[s]ustainability of primary frequency response becomes more important during light-load conditions when there are generally fewer frequency-responsive generators online."⁶² This is because inertia, i.e., the resistance to a change in the motion of an object, plays a crucial role in how fast frequency declines following the sudden loss of generation.⁶³ When the inertia on the system is low (i.e. fewer generators on line), the loss of generation creates a steeper frequency excursion and thus the need for faster frequency response.⁶⁴

40. For the Eastern Interconnection, the proposed Reliability Standard's resource contingency criterion for calculating the Interconnection Frequency Response Obligation

⁶² *Id.* at 32.

⁶³ *Id.* at 39-40. Inertia is provided from the stored energy in the rotating mass of the turbine-generators and synchronous motors on the Interconnection. *See Id.*, Exh. D at 16-17.

⁶⁴ *Id.*, Exh. F at 40. The reduction in inertia also drives a need for higher speed response to frequency excursions.

is based on an event that took place during heavy system load conditions. The stability simulation testing for the Eastern Interconnection resource contingency criteria used in the determination of the Interconnection Frequency Response Obligation was limited to analysis using a generic governor stability case, therefore representing conditions far different than light-load conditions when system inertia and load response would be expected to be lower than in the generic case. The Frequency Response Initiative Report recommends the development of a new light-load case study, and that the resource contingency criterion for the Eastern Interconnection Frequency Response Obligation should be re-simulated.⁶⁵ According to NERC, the Eastern Interconnection Reliability Assessment Group has agreed to prepare an updated generic governor 2013 summer light-load case (from the 2012 case series) by August 1, 2013, and evaluate Eastern Interconnection Frequency Response Obligation during the expected light-load conditions.⁶⁶

⁶⁵ *Id.* at 99.

⁶⁶ *Id.*, Exh. G. A study conducted by the National Renewable Energy Laboratory explored the relationship between system disturbance and grid frequency perturbation. *See* National Renewable Energy Laboratory, Eastern Frequency Response Study (May 2013). A key finding is that the dynamic model of the Eastern Interconnection can be adjusted to more closely capture the observed behavior. In particular, the amount of generation with governor controls activated was adjusted to model the contingency used in calculating the Eastern Interconnection Frequency Response Obligation. In addition, a light load power flow case was selected with the expectation that it would represent one of the more challenging conditions for the Eastern Interconnection with respect to frequency response. *See* <http://www.nrel.gov/docs/fy13osti/58077.pdf>.

41. We agree with NERC that the study of light-load scenarios is useful to determining an appropriate Interconnection Frequency Response Obligation, in particular for the Eastern Interconnection.⁶⁷ Accordingly, we propose to direct that NERC submit the results of the light-load case, together with NERC's recommendations on whether further actions are warranted.

F. Assignment of Violation Risk Factors and Violation Severity Levels

42. In its Petition, NERC proposes a "medium" violation risk factor for each requirement of the proposed Reliability Standard. We do not believe that NERC adequately justifies assignment of a medium violation risk factor to Requirement R1, which establishes the Frequency Response Measure a Balancing Authority must achieve to arrest a decline in system frequency. NERC asserts that a violation of this requirement will not cause bulk electric system instability, separation or cascading failures because "a Balancing Authority's previous year's Frequency Bias setting is included within its ACE equation and would provide support for the contingency."⁶⁸ This explanation does not apply to Requirement R1. The ACE equation provides input to secondary frequency control. As identified in NERC's background document for BAL-003-1, secondary

⁶⁷ According to NERC, "[m]odeling of frequency response characteristics has been a known problem since at least 2008, when forensic modeling of the Eastern Interconnection required a 'de-tuning' of the existing [Multiregional Modeling Working Group] dynamics governor to 20 % of modeled (80% error) to approach the measured frequency response values from the [August 4, 2007] event." See NERC Petition, Exh. F at 35.

⁶⁸ *Id.*, Exh. J at 7.

frequency is delivered within minutes while the time needed to arrest a frequency decline is within seconds.⁶⁹ NERC describes frequency response as a critical component to the reliable operation of the Bulk-Power System, indicating that Requirement R1 does not impose merely an administrative burden. The medium violation risk factor that the Commission approved for each BAL-003-0.1b requirement does not apply to Requirement R1 because it has no equivalent in that standard. We propose to direct NERC to assign a high violation risk factor to Requirement R1. We seek comments on this proposal.

43. We propose several changes to NERC's proposed violation severity level assignments. For Requirement R1, NERC proposes two violation severity levels depending on whether a Balancing Authority or a Frequency Response Sharing Group has an annual Frequency Response Measure "less negative than its Frequency Response Obligation by more than 1% but by at most 30%, or 15 MW/0.1Hz, whichever one is the greater deviation from its [Frequency Response Obligation]." This violation would have a "lower" severity level if "[t]he summation of the Balancing Authorities' [Frequency Response Measure] within an Interconnection was equal to or more negative than the Interconnection's IFRO," and a "high" severity level if this summation "did not meet its [Interconnection Frequency Response Obligation]." Based on these two possibilities for this summation, NERC proposes either a "medium" severity level and a "severe" severity level for a Balancing Authority or Frequency Response Sharing Group with an Frequency

⁶⁹ *Id.*, Exh. D at 38.

Response Measure that is “less negative than its [Frequency Response Obligation] by more than 30% or by more than 15 MW/0.1 Hz, whichever is the greater deviation from its [Frequency Response Obligation].”

44. NERC assigns these severity levels partly on performance of Requirement R1 by all other responsible entities in the Interconnection in which a violator is located. We do not agree with these assignments. Violation severity levels focus on a violator’s deviation from required performance, not the risk the violation is expected to pose to reliability or performance by other entities.⁷⁰ A Balancing Authority or Frequency Response Sharing Group subject to Requirement R1 does not control compliance with this requirement by any other Balancing Authority or Frequency Response Sharing Group within the same Interconnection. It is unfair to base a penalty on a responsible entity in part upon the collective compliance or lack of compliance by independent entities. We propose that NERC modify its severity level assignments for Requirement R1 to remove references to performance by other entities or otherwise to address our concern. We seek comments on this proposal.

G. Supporting/Associated Documents

45. Proposed Reliability Standard BAL-003-1 has several supporting or associated documents. Attachment A is appended to the proposed Reliability Standard, and is explicitly referenced in Requirements R1 and R2. For example, Requirement R1

⁷⁰ Sanction Guidelines of the North American Electric Reliability Corporation (effective January 31, 2012), at 8 (section 3.1.2).

provides in part that “[e]ach Frequency Response Sharing Group (FRSG) or Balancing Authority ... shall achieve an annual Frequency Response Measure (FRM) (as calculated and reported in accordance with Attachment A) that is equal to or more negative than its Frequency Response Obligation...” NERC’s Procedure for ERO Support of Frequency Response and Frequency Bias Setting Standard (Procedure), is included as an “associated document” in the proposed Reliability Standard, and is referenced in Attachment A.⁷¹ Likewise, Requirement 4 of proposed BAL-003-1 references FRS Forms 1 and 2, stating that “each Balancing Authority that provides Overlap Regulation Service shall modify its Frequency Bias Setting in its ACE calculation ... to be equivalent to “the sum of Frequency Bias Settings as shown on FRS Form 1 and Form 2 ... as validated by the ERO.”⁷²

46. These associated and supporting documents are explicitly referenced in the Requirements of the Reliability Standard. Thus, failure of a Balancing Authority to comply with such associated and supporting documents could result in non-compliance with the underlying Requirement.⁷³

⁷¹ The Procedure is provided as Exh. C to the NERC petition. NERC states that it included the Procedure in the petition for informational purposes and NERC does not request Commission approval of the document. NERC Petition at 4.

⁷² Proposed Reliability Standard BAL-003-1 identifies FRS Form 1 and FRS Form 2 as “associated documents.” Neither form is included in the NERC Petition.

⁷³ Attachment A and the Procedures also require NERC to take certain actions pertaining to the calculation of frequency response measure and allocation among balancing authorities. The ERO is not an applicable entity pursuant to proposed Reliability Standard BAL-003-1. The ERO, however, has an independent obligation to
(continued...)

IV. Information Collection Statement

47. This NOPR proposes to approve Reliability Standard BAL-003-1, which establishes an Interconnection Frequency Response Obligation based on the frequency response observations reported annually by Balancing Authorities or Frequency Response Sharing Groups for the frequency events specified by the ERO. The collection of information contained in the proposed Reliability Standard BAL-003-1 is subject to review by the Office of Management and Budget (OMB) under section 3507(d) of the Paperwork Reduction Act of 1995 (PRA).⁷⁴ OMB's regulations require that OMB approve certain reporting and recordkeeping requirements (collections of information) imposed by an agency.⁷⁵ Upon approval of a collection of information, OMB will assign an OMB control number and expiration date. Respondents subject to the filing requirements of this rule will not be penalized for failing to respond to these collections of information unless the collections of information display a valid OMB control number.

48. Comments are solicited on the Commission's need for this information, whether the information will have practical utility, the accuracy of the provided burden estimate, ways to enhance the quality, utility, and clarity of the information to be collected, and any

“ensure compliance with a reliability standard or any Commission order affecting the ERO or a regional entity” and the Commission can take “such action as is necessary or appropriate” to ensure that the ERO fulfills this responsibility under Attachment A and the Procedures. *See* 16 U.S.C. 824o(e)(5).

⁷⁴ 44 U.S.C. 3507(d) (2006).

⁷⁵ 5 CFR 1320.11 (2012).

suggested methods for minimizing the respondent's burden, including the use of automated information techniques. Specifically, the Commission asks that any revised burden or cost estimates submitted by commenters be supported by sufficient detail to understand how the estimates are generated.

49. Public Reporting Burden: The proposed Reliability Standard requires the collection of certain information to establish the Interconnection Frequency Response Obligation and the Frequency Bias Setting for each Balancing Authority. Each Balancing Authority reports its previous year Frequency Response Measure and Frequency Bias Setting to NERC, and revised Frequency Bias Settings are based on data from events the Balancing Authorities report on the proposed FRS Form 1. The information provided on the FRS Form 1 is based on events which qualify for analyses,⁷⁶ and NERC states that it will identify between 20 to 35 events in each Interconnection for calculating the Frequency Response Measure and Frequency Bias Setting and the Frequency Response Measure.⁷⁷

50. Allotting eight hours for Balancing Authorities to compile the information on candidate events,⁷⁸ multiplied by 28 events per Balancing Authority per year yields

⁷⁶ NERC states that it will provide quarterly posting of candidate events to assist the Balancing Authorities with compliance, and lessen the burden of the annual submission of FRS Form 1 data. NERC Petition, Exh. C at 3-4.

⁷⁷ *Id.* at 1. The Frequency Response Initiative Report states that between 20 and 25 events are necessary for statistical analysis. *Id.*, Exh. F at 72.

⁷⁸ The information is automatically generated from computer data bases. However, time is allotted to compile, verify, and review the information.

224 hours per year per Balancing Authority as the regulatory burden for compliance.⁷⁹

As of May 31, 2013, there are 132 registered Balancing Authorities.⁸⁰ Accordingly, the Commission estimates the annual regulatory burden for compliance with the proposed Reliability Standard to be \$13,560 per Balancing Authority,⁸¹ with an estimated total annual cost for all Balancing Authorities to be \$1,789,920.⁸²

BAL-003-1 (Frequency Response and Frequency Bias Setting)	Number of Balancing Authority Respondents	Number of Responses per Respondent	Average Burden Hours Per Response	Total Annual Burden Hours	Estimated Total Annual Cost (\$)
	(1)	(2)	(3)	(1)x(2)x(3)	Total hours x \$60
Annual Reporting	132	28	8	29,568	\$1,774,080
Data Retention	132	1	2	264	\$15,840
TOTAL				29,832	\$1,789,920

Title: FERC-725R, Mandatory Reliability Standards: Reliability Standard BAL-003-1

⁷⁹ Assuming an average of between 20 and 35 events per year.

⁸⁰ NERC Compliance Registry List, May 30, 2013.

⁸¹ The estimated hourly loaded cost (salary plus benefits) for an engineer is assumed to be \$60/hour, based on salaries as reported by the Bureau of Labor Statistics (BLS) (http://bls.gov/oes/current/naics2_22.htm). Loaded costs are BLS rates divided by 0.703 and rounded to the nearest dollar. <http://www.bls.gov/news.release/ecec.nr0.htm>

⁸² The estimated total annual cost includes an annual data retention burden of \$15,840 for all Balancing Authorities.

Action: Proposed Collection of Information

OMB Control No: To be determined

Respondents: Business or other for-profit, and not-for-profit institutions.

Frequency of Responses: Annual.

51. Necessity of the Information: The proposed revision of NERC Reliability Standard BAL-003-1 is part of the implementation of the Congressional mandate of the Energy Policy Act of 2005 to develop mandatory and enforceable Reliability Standards to better ensure the reliability of the nation's Bulk Power System. Specifically, the proposed Reliability Standard BAL-003-1 would ensure sufficient Frequency Response from the Balancing Authorities to maintain Interconnection Frequency within predefined bounds.

52. Internal Review: The Commission has reviewed the proposed revision to the current Reliability Standard and made a determination that its action is necessary to implement section 215 of the FPA. The Commission has assured itself, by means of its internal review, that there is specific, objective support for the burden estimate associated with the information requirements.

53. Interested persons may obtain information on the reporting requirements by contacting the following: Federal Energy Regulatory Commission, 888 First Street, NE, Washington, DC 20426 [Attention: Ellen Brown, Office of the Executive Director, e-mail: DataClearance@ferc.gov, phone: (202) 502-8663, fax: (202) 273-0873].

54. For submitting comments concerning the collection of information and the associated burden estimate, please send your comments to the Commission and to the

Office of Management and Budget, Office of Information and Regulatory Affairs, Washington, DC 20503 [Attention: Desk Officer for the Federal Energy Regulatory Commission, phone: (202) 395-4638, fax: (202) 395-7285]. For security reasons, comments to OMB should be submitted by e-mail to: oir_submission@omb.eop.gov. Comments submitted to OMB should include Docket Number RM13-11-000.

V. Environmental Analysis

55. The Commission is required to prepare an Environmental Assessment or an Environmental Impact Statement for any action that may have a significant adverse effect on the human environment.⁸³ The Commission has categorically excluded certain actions from this requirement as not having a significant effect on the human environment. The actions proposed here fall within the categorical exclusion in the Commission's regulations for rules that are clarifying, corrective or procedural, or do not substantially change the effect of the regulations being amended.⁸⁴ The actions proposed herein fall within this categorical exclusion in the Commission's regulations.

VI. Regulatory Flexibility Act

56. The Regulatory Flexibility Act of 1980 (RFA)⁸⁵ generally requires a description and analysis of proposed rules that will have significant economic impact on a substantial

⁸³ *Regulations Implementing the National Environmental Policy Act of 1969*, Order No. 486, 52 FR 47897 (Dec. 17, 1987), FERC Stats. & Regs., Regulations Preambles 1986-1990 ¶ 30,783 (1987).

⁸⁴ 18 CFR 380.4(a)(2)(ii) (2012).

⁸⁵ 5 U.S.C. 601-612.

number of small entities. The NERC registry includes 132 individual Balancing Authorities. Comparison of the NERC Compliance Registry with data submitted to the Energy Information Administration on Form EIA-861 indicates that, of these entities, 15 may qualify as small entities.⁸⁶

57. As noted above, the Commission estimates the annual regulatory burden for compliance with the proposed Reliability Standard to be \$13,560 per Balancing Authority. This estimate for all Balancing Authorities was established using 28 events per year, but smaller entities may have fewer events which qualify for analysis,⁸⁷ and the costs for these smaller entities may be reduced. Further, while the proposed Reliability Standard establishes a Balancing Authority's Frequency Response Obligation, because Balancing Authorities are currently providing frequency response, we do not anticipate additional compliance costs. Accordingly, we do not consider the cost of the proposed Reliability Standard to be a significant economic impact for small entities because it should not represent a significant percentage of an affected small entity's operating budget. Accordingly, no regulatory flexibility analysis is required.

⁸⁶ The RFA definition of "small entity" refers to the definition provided in the Small Business Act (SBA), which defines a "small business concern" as a business that is independently owned and operated and that is not dominant in its field of operation. *See* 15 U.S.C. 632 (2006). According to the Small Business Administration, an electric utility is defined as "small" if, including its affiliates, it is primarily engaged in the generation, transmission, and/or distribution of electric energy for sale and its total electric output for the preceding fiscal year did not exceed 4 million megawatt hours.

⁸⁷ The Procedures establish a minimum of 20 events for analysis, and a process for identifying when fewer than 20 events are available for analysis.

VII. Comment Procedures

58. The Commission invites interested persons to submit comments on the matters and issues proposed in this notice to be adopted, including any related matters or alternative proposals that commenters may wish to discuss. Comments are due **[INSERT DATE 60 days after publication in the FEDERAL REGISTER]**. Comments must refer to Docket No. RM13-11-000, and must include the commenter's name, the organization they represent, if applicable, and their address in their comments.

59. The Commission encourages comments to be filed electronically via the eFiling link on the Commission's web site at <http://www.ferc.gov>. The Commission accepts most standard word processing formats. Documents created electronically using word processing software should be filed in native applications or print-to-PDF format and not in a scanned format. Commenters filing electronically do not need to make a paper filing.

60. Commenters that are not able to file comments electronically must send an original of their comments to: Federal Energy Regulatory Commission, Secretary of the Commission, 888 First Street NE, Washington, DC, 20426.

61. All comments will be placed in the Commission's public files and may be viewed, printed, or downloaded remotely as described in the Document Availability section below. Commenters on this proposal are not required to serve copies of their comments on other commenters.

VIII. Document Availability

62. In addition to publishing the full text of this document in the Federal Register, the Commission provides all interested persons an opportunity to view and/or print the contents of this document via the Internet through the Commission's Home Page (<http://www.ferc.gov>) and in the Commission's Public Reference Room during normal business hours (8:30 a.m. to 5:00 p.m. Eastern time) at 888 First Street, NE, Room 2A, Washington DC 20426.

63. From the Commission's Home Page on the Internet, this information is available on eLibrary. The full text of this document is available on eLibrary in PDF and Microsoft Word format for viewing, printing, and/or downloading. To access this document in eLibrary, type the docket number excluding the last three digits of this document in the docket number field.

64. User assistance is available for eLibrary and the Commission's website during normal business hours from the Commission's Online Support at (202) 502-6652 (toll free at 1-866-208-3676) or email at ferconlinesupport@ferc.gov, or the Public Reference Room at (202) 502-8371, TTY (202) 502-8659. E-mail the Public Reference Room at public.referenceroom@ferc.gov.

By direction of the Commission.

Kimberly D. Bose,
Secretary.